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been related. Happily for the family, none of them were eſſentially injured. Mrs. Joy, who was in the chamber, over the place where the lightning entered, was preſſed down, as with a heavy weight, and experienced a conſiderable degree of numbneſs till the next day.

With great affection and eſteem,
I am, Sir,
Your moſt obedient humble ſervant,
JOHN LATHROP.

Rev. Preſident Willard.

Obſervations on Electricity, and an improved mode of conſtructing Lightning Rods. In a letter, from the Hon. LOAMMI BALDWIN, *F.A.A. to the Rev.* JOSEPH WILLARD, *D.D. L.L.D. vice preſident of the American Academy of Arts and Sciences.*

Woburn, Jan. 25, 1797.

SIR,

THE partial effects of the electrical rods, which have been erected for the protection of buildings, &c. have led me to think, that they are not upon the beſt conſtruction, eſpecially thoſe that terminate in one point

The philoſophy of electricity ſeems to be enveloped in much obſcurity. Electrics and non electrics exiſt in nature ; poſitive

poſitive and negative, progreſs and direction are properties not without their evidence, yet want explanation.

From the experiments and obſervations, which I have made, I am inclined to think, that upon the ſudden aſſemblage of the clouds, in the time of a thunderſtorm, the electrical fluid is excited and diſpoſed, unequally, in *ſtrata*, at different altitudes, which are continually varying in their ſituation, according as the exploſions of the lightning ſhift the power of attraction; and it is highly probable, that there are, at thoſe times, *ſtrata* of non conducting atmoſphere, intervening between other *ſtrata* differently affected. Now if this be really the caſe, and the height of the points of the rod do not happen to correſpond with the level of the *ſtratum* affected, the uſe of the rod will in a great meaſure be loſt.

It is a well known fact, that the electrical fluid enters and eſcapes by points and angles more readily than by ſpherical terminations.

From theſe circumſtances I think it muſt appear, that an electrical rod, prepared like the ſample which accompanies this paper, would be better adapted to equalize the fluid than the common cylindrical rods in uſe; for the infinity of points, or rather the continuation of them from the bottom to the top of the rod, provides for the entrance or eſcape of the fluid of any *ſtratum*, however affected, at any level, at or below the ſummit points; which, I think, muſt be conſidered an additional advantage; at any rate, ſuch a rod will anſwer as well as the other kind. If gentlemen would make this addition, when they erect any new rod; the effect would ſoon be known, and it is my opinion that a rod might be denticulated in the manner propoſed, at leſs expenſe than ſquare bars could be reduced into a cylindrical form.

A rod, upon theſe principles, may be prepared in the following manner. Take a number of ſquare bars of iron, as they come to our market, of about an inch in thickneſs, and connect them together by a ſcarfed, or a halved joint at the ends, and ſecured with a ſcrew. When a ſufficient number of bars are thus connected to make the height intended (which ſhould always be as high as the rod can poſſibly be ſuſtained) then take them aſunder, at the joints, and place each ſingle bar in ſucceſſion, on a blackſmith's vice, with the jaws about half an inch apart, for one angle of the bar to reſt between, without bruiſing, while the workman proceeds, with a cold chiſſel, well prepared, to raiſe a barb, at the diſtance of every inch, or half inch, along the upper corner or angle of the bar, as it lays in the vice, and when that corner is done, bring up another angle, in the ſame poſition, and ſo proceed, until the whole are finiſhed.

Rods upon this conſtruction may terminate with three points; but I ſhould prefer a light ſtar, or glory, at the top of the rod, and the lower end ſunk pretty deep into the earth, perhaps to the level of the ſprings of water, and the hole filled up with charcoal about the rod.

Perhaps,

Perhaps, in ſome particular ſtates of the atmoſphere, ſuch a rod might aſſiſt in reſtoring the equilibrium of the fluid among the *ſtrata* differently affected, by its entering at one place in the rod, and eſcaping at another, while the earth remained neutral.

If you think, that any thing can be collected from theſe hints to improve the electrical rod, I am willing they ſhould be communicated to the American Academy of Arts and Sciences for their conſideration.

I am with much reſpect, Sir,
Your moſt obedient ſervant,
LOAMMI BALDWIN.

Rev. Joſeph Willard, D.D. L.L.D.
Vice Preſident of the American Academy of Arts and Sciences.
Woburn, Jan. 25, 1797.

Remarks on the Hon. LOAMMI BALDWIN'*s propoſed improvement in Lightning Rods, in a letter from* AARON PUTNAM, *Eſq. to the Rev.* JEDIDIAH MORSE, *D.D. A.A.S.*

REV. SIR,

AGREEABLY to your requeſt, I now ſend you the few remarks I made the laſt ſummer, upon the communication of the Hon. L. Baldwin, Eſq. on electrical rods, publiſhed by order of the American Academy of Arts and Sciences, in the